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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/517,113	03/07/2000	James Gregory Mittel	PT03216U	9891

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MOTOROLA, INC
INTELLECTUAL PROPERTY SECTION
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FT LAUDERDAL, FL 33322

EXAMINER

WILLIAMS, DEMETRIA A

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 07/21/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/517,113

Applicant(s)

MITTEL, JAMES GREGORY

Examiner

Demetria A. Williams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 15-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,7,8,10-12 and 17 is/are rejected.
- 7) ☒ Claim(s) 3,6,9,15,16 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The corrected or substitute drawings were received on May 12, 2003. These drawings are acceptable.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4, 7, 8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mittel et al ("Mittel") in view of Sutterlin et al ("Sutterlin") and Schlag.
4. Regarding claims 1 and 10, Mittel discloses a prior art sigma-delta converter comprising a forward path that includes a summer (figure 1, reference character 122), a filter for averaging the signal (figure 1, reference character 124), a comparator (figure 1, reference character 106), and a feedback path (figure 1, 118). The Mittel reference does not include an instability generator, including a flip-flop, as claimed by the applicant for improving performance of the converter for low-level input signals.

Sutterlin discloses a sigma-delta converter similar to that of Mittel. In the system described by Sutterlin, a signal is injected into the path of the converter through capacitors. This signal is at a frequency that falls outside the band of interest and improves the linearity and signal-to-noise performance of the modulator (see generally column 8, lines 41-55; figures 8 and

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9). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the admitted prior art to include circuitry for introducing a signal into the path, as disclosed by Sutterlin, in order to improve linearity when converting low level input signals.

The Sutterlin system also includes a D flip-flop in the feedback path, but does not specify that the flip-flop is used to inject an instability into the path. Schlag discloses a sigma-delta modulator comprising a D flip-flop in the feedback path for injecting a signal into converter (see generally column 1, lines 55-62; column 3, lines 35-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a D flip-flop, which is a common component in sigma-delta modulators, for injecting a signal into the forward path in order to prevent propagation delays (see Schlag, column 3, lines 51-65).

5. Regarding claim 2, Mittel further discloses a storage device at the output of the comparator (see generally figure 1, reference character 108), which delays the signal responsive to a clock signal.

6. Regarding claim 4, the admitted prior art illustrates that the storage device comprises two D flip-flops (see generally figure 9, reference character 108).

7. Regarding claim 7, Sutterlin discloses that a square-wave is injected into the converter through a resistor and capacitor (see generally column 8, lines 52-55) for generating the instability signal.

8. Regarding claim 8, Mittel illustrates that the sigma-delta converter includes a second summer (figure 1, reference character 122), a second filter (figure 1, reference character 124), and a second feedback path (figure 1).

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9. Claims 11, 12, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mittel in view of Sutterlin.

10. Regarding claim 11, Mittel discloses a communications device for radio communications comprising an antenna (figure 11), a receiver having a sigma-delta converter (figure 11, reference characters 604 and 100), a clock generator, and a processor (figure 11, reference character 608). The sigma-delta converter includes a forward path that includes a summer (figure 1, reference character 122), a filter for averaging the signal (figure 1, reference character 124), and a comparator (figure 1, reference character 106), and a feedback path (figure 1). Mittel does not include an instability generator as claimed by the applicant for improving performance of the converter for low-level input signals, nor does the Mittel reference specify a specific type of communication device. However, two-way radio, two-way pager, radiotelephone, and one-way pager are all well known radio communications methods, and their use would have been obvious to one of ordinary skill in the art at the time of the invention.

Sutterlin discloses a sigma-delta converter similar to that of the disclosed by Mittel. In the system described by Sutterlin, a signal is injected into the forward path of the converter. This signal is at a frequency that falls outside the band of interest and improves the linearity and signal-to-noise performance of the modulator (see generally column 8, lines 41-55; figures 8 and 9). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Mittel to include circuitry for introducing a signal into the path, as disclosed by Sutterlin, in order to improve linearity when converting low level input signals.

11. Regarding claim 12, Mittel further discloses that the device includes user inputs, which are controlled by the processor (see generally column 10, lines 22-30; figure 11). While Mittel

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does not specifically disclose the inclusion of a transmitter for modulating and up-converting the signal, it would have been obvious to one of ordinary skill in the art to include a transmitter for performing the well-known transmission operations.

12. Regarding claim 17, Mittel further illustrates that the storage device comprises two D flip-flops (see generally figure 9, reference character 108).

Claim Objections

13. Claims 3, 6, 9, 15, 16, and 18 are objected to as being dependent upon a rejected base claim.

Remarks

14. Upon further consideration and search, it has been found that the amendments to claims 1, 10, and 11, based on material previously thought to be allowable, are insufficient to overcome the prior art. New bases for rejection have been applied above and the examiner regrets any inconvenience to the applicant.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Demetria A. Williams whose telephone number is (703) 305-4078. The examiner can normally be reached on Monday - Friday, 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (703) 305-4378. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3800.

daw

July 17, 2003

TEMESGHEN GHEBRETISSAE
PRIMARY EXAMINER

7/17/03